

# An investigation in to future development and adoption of online payment systems

**Abstract:** This article comprises the importance of E payment systems. E-payments is a sub category of e commerce in which a customer buys or sell things online by using a web page or any sort of platform. In general all sort of transactions which are done through internet are categorized as e-payments Different means are being used for the e payments. The use of e payment is being increased rapidly. There are different methods which are currently being used for the E-Payment. These methods include different sort of cards and electronic transfer. There has been a tremendous growth in E payment methods and more people are using such services. In the future there are many other methods are coming for the implementation of e payment and e commerce such as; smart cards, RFID and bitcoins.

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## E-Payment

**E** Payment is basically a type of non-cash payment which is done through different methods but there is no cash included in the activity. There are several methods for E payment such as Credit cards, Debit cards, bitcoins, NFC, RFIDs and e – checks etc. There are basically 3 types of transactions which usually takes place. Very first is one time customer to vendor payment. This is done while shopping online through several e commerce stores such as Amazon etc. In this type of transactions credit and debit cards are most popular. Payment is done after entering the debit or credit card number and other information. E checks are also being used for such transactions. 2nd type of payment is recurring customer to vendor payment. In this kind of transaction a regular and specific amount of payment is made after a specific interval of time. This payment is generated automatically. This type of payment is usually made to the insurance companies and telephone companies. This sort of payment is also used to cover up some long term contracts. 3rd type of transaction is automatic bank to vendor payment. In this kind of payment one individual can pay the bill by logging in to the bank website and transferring the money from one's account to another by using a password.

## Methods of E-Payment

Different sort of e payment methods are being used in today's world. It is very important to look for new methods with the help of which people will be able to pay their bills (Hameed, 2009). The most common method which is being used for e payment purposes is through cards. Credit cards, prepaid cards and debit cards are most common types of cards which are being used by public. Most of the times people uses the cards which have a magnetic stripe on them. When a person wants to pay his/her bills through a card he/she gives it to the merchant who swipe the card in a machine the card transfers the data to the computer and thus the transaction is proceeded (Sterling, 1979). Now a day smart cards are also getting a lot of popularity, instead of a magnetic stripe these cards contains a chip which transfers customers data to the computer and transaction takes place accordingly. Japan and Korea are among the first countries who have introduced smart cards in their banking system. These computer chips could be use furthermore in many devices (Drucker, 2005). Another method for e business transaction is through internet. In this method people who are purchasing stuff online can pay online with the help of e banking services. Most of the transactions which are done online are given by the credit cards and debit cards. Mobile payment is also one of the methods for e business transaction. Customers can pay their bills through their mobile phones. PayPal is also one of the most important methods for e business (Baliga, Hinton, & Tucker, 2012). PayPal now a day is owned by EBay. PayPal services allow individuals to pay through their own credit or debit cards. E banking is also a great method for e businesses in which one can transfer payments online with the help of e banking facilities of the bank. The user will be able

to open up his/her account online and can transfer funds accordingly (N Dangi, 2010). Customers are very happy to use these services provided by their banks. Another type of e payment is with the help of television set up boxes and Satellite receiver. The boxes which are directly attached to the TV can also be used for E Payments in some cases. Customers are able to make their purchases by watching products on televisions and can also make the purchase accordingly and pay through the TV boxes, the payment is made with the help of a credit or debit card (K., 2013).

### **Growth in E-Payments**

With the high growth of internet in 1990 there were some huge expectations to use the internet more and more in the e commerce section. There were different sort of barriers in the widespread use of e commerce and still there are many barriers. A lot of attention was given to reduce and eliminate such barriers. In the case of B2C (business to consumer) sector there were a number of hurdles. Many business are operating through online stores and directly selling their stuff to the end consumers (Weiner, 2007). Now a day the e commerce is currently growing at the rate of 25% per year. This growth is not constant for some sector such as travel this growth is much more. After the introduction of e payments the international trade has also increased. Till date one of the major means of online payment is credit cards. Credit cards are used most in international transaction as well, according to an estimate credit cards comprises the 90% of the total sales online (Cotteleer, Cotteleer, & Prochnow, 2007). There are also many other means of online payments such as mediating services, mobile payment and other sort of electronic currencies although debit cards and payments through online banking are widely used in the online payments (Jespersen & Bruus, 2007). However looking at the mediating services, these services are not very much popular other than PayPal. The introduction of a new payment method faces a lot of barriers and problems by looking at the market characteristics. A very high amount of initial investment cost is required and a very wide user base is also required to make a payment method successful because of these things the position of the payment method gets strengthen in the market (Hartmann, 2006).

### **Payment through cards**

The most widely used way of e payment is by the use of credit cards. When credit cards were introduced then there were very low adoption rate but with the passage of time a number of security concerns have been added (Ashrafi & Ng, 2009). A number of secure features have been added in to credit cards to make it more useful. One of the main differences in online and offline shopping is that in the online shopping the merchant doesn't obtain signed confirmation from the customer but with the technological advancements the authentication has been increased rapidly. There are many characteristics of a credit card. First of all the credit cards have a huge number of customer base however the fees associated with the use of credit card is relatively high as compare to other methods (Heng, 2004). Credit cards are easy to obtain from a bank and as long as bank is reliable the credit card is also reliable.

Another famous and mostly used method of online payment is through debit card. When a debit card is used the payment is directly withdrawn from the bank account. In this case there are major concerns are from the side of consumers. In the case of debit card providing the physical card is not necessary, the customer can only provide the card number. Debit cards also have a lot of customer base. The problems with debit card is that most of the people doesn't trust it as if it gets stolen then any one can use it easily.

### **Future Developments**

In the future there are many other methods are coming for the implementation of e payment and e commerce. One of the examples is smart card systems; smart cards such as Cybercash and Digicash have some success in the past (Panurach, 1996). Now a day's smart card systems are being used to pay small amounts within the organizations. To use such cards special kind of hardware is required which would be able to read such cards. Another payment system which is coming forward is online cash system. There are a number of online cash systems such as Virtual BBVA and it is being implemented in different countries such as Australia and Spain.

Another development which is currently being made in e payment industry is through RFIDs (SIMSON, Juels, & Pappu, 2005). There are a lot of things which have RFID tags on them. These tags emit radio signals and these signals cannot communicate with each other. These chips are basically micro-computers which are used in big stores like Wal-Mart. Such retail outlets already know that what things are being taken out from the stores by the help of RFID tags. In future it is expected to use a smart card for the payment of all the things which will contain RFID tags on them. After taking the things the only thing one as to do is pass through a specific gate and all the payment will occur by itself (Heydt-Benjamin, Bailey, Fu, & Juels, 2007). The RFID will automatically read all the details on your credit card and transaction will occur. In this system there are a lot of security concerns. Hacking is one of the major issues in it.

Another evaluation in e payments is Bitcoins. Some might say that Bitcoins is the 2nd biggest invention after internet (Meiklejohn, Pomarole, & Jordan, 2013). Bitcoin is the next step in evaluation of money. By looking on the history it could be said that from time to time there are different things which are used to transfer value from one to another. In the past governments used to store gold and silver in response to the currency but later on governments moved from that and started creating fiat currency which is built based on laws and trust on government. Bitcoins is the first currency which is born in the internet and being used for the transaction purposes. Bitcoins could be used to buy daily used items like Pizza, coffee and stays in hotel. Now the question arises that how does Bitcoins work. Basically bitcoin is a protocol which is used to exchange value over internet. It works on a public ledger system; the bitcoin user can easily access his/her account by the use of a password. All the transactions which are being made through bitcoins gets validated by a network of users which are called miners. Those miners use the power of their computer systems in order to get a chance for bitcoins. The supply of bitcoins is limited and it is 21 million (Martins & Yang, 2011). There is no authority that would be responsible to create bitcoins. The rate of supply of bitcoins can be diminishes in a predictable way. There are many developments which are currently being made in the bitcoin context. Currently bitcoins are facing oppositions and restrictions from several governments but in the future it is expected that bitcoins can totally change the e payment methods. Now a day many companies are busy in making personal POS solutions for individuals. One can simply plug it in their smart phones and swipe their credit or debit card through it. This is also one way of e payments. Example Square is making such kind of POS solutions.

### **Conclusion:**

It has been analyzed by studying already available literature and also by the use of primary data, that; cash is being replaced by the plastic money and recently have also been replaced by electronic means. Either in case of the business use or for the personal use, the penetration of the electronic means for payment has been increasing with time. Now a day people are moving towards different mediums of payment which are not in the form of cash it includes cards such as credit and debit cards. It also includes many other mediums such as electronic transfer and payment through a gateway. In future many other technologies are covering and transforming the way people using to do transaction. Though there are few of the major concerns which have hindered the growth of E-Payments, like; the registration procedure which is required by the companies and is mandatory for the customers to follow, not only the procedure is complex for some of the people but also it is lengthy to follow which makes the users irritated, security issues are also threatening the users of the e-payments as people do not feel secure while providing their credit card information on electronic means.

## References

- Allen, H. (2003). Innovations in Retail Payments: E-Payments. *Social Science Research Network*, 11-20.
- Ashrafi, M. Z., & Ng, S. K. (2009). Privacy-preserving e-payments using one-time payment details. *Computer Standards & Interfaces*, 321–328.
- Baliga, J., Hinton, K., & Tucker, R. (2012). *Energy consumption of the Internet* (1st ed.). Australia: ARC Special Research Centre for Ultra-Broadband Information Networks (CUBIN). Retrieved from [http://www.ing.unitn.it/~fontana/GreenInternet/Recent%20Papers%20and%20p2p/Baliga\\_Hinton\\_Tucker\\_COIN07.pdf](http://www.ing.unitn.it/~fontana/GreenInternet/Recent%20Papers%20and%20p2p/Baliga_Hinton_Tucker_COIN07.pdf)
- Cotteleer, M. J., Cotteleer, C. A., & Prochnow, A. (2007). Cutting checks: challenges and choices in B2B e-payments. *Communications of the ACM*, 56-61 .
- Drucker, P. (2005). ICT Policy Formulation and e-Strategy Development. *Elsevier*, 4. Retrieved from <http://unpan1.un.org/intradoc/groups/public/documents/APCITY-/UNPAN005832.pdf>
- Hameed, T. (2009). ICT as an enabler of Socio-Economic Development . *Information and Communication University*, pp. 305-732. Retrieved 11 3, 2014, from [http://pdf.aminer.org/000/287/700/soft\\_project\\_management\\_toward\\_socio\\_faculty\\_development.pdf](http://pdf.aminer.org/000/287/700/soft_project_management_toward_socio_faculty_development.pdf)
- Hartmann, M. E. (2006). *E-Payments Evolution*. Physica-Verlag HD.
- Heng, S. (2004). *E-Payments: Modern Complement to Traditional Payment Systems*. Social Science Research Network.
- Heydt-Benjamin, T., Bailey, D., Fu, K., & Juels, A. (2007). Vulnerabilities in first-generation RFID-enabled credit cards. *Financial Cryptography and Data Security*, 2-14.
- Jespersen, T., & Bruus, K. (2007, 1 30). Method for performing a transaction over a network. US.
- K., J. (2013). E-Commerce Payment Systems.
- Martins, S., & Yang, Y. (2011). Introduction to bitcoins: a pseudo-anonymous electronic currency system. *Conference of the Center for Advanced Studies on Collaborative Research* (pp. 349-350). ACM.
- Meiklejohn, S., Pomarole, M., & Jordan, G. (2013). A fistful of bitcoins: characterizing payments among men with no names. *Internet measurement conference* (pp. 127-140 ). ACM.
- N Dangi, H. S. (2010). E-Choupal: hope or hype? *American Journal of Economics and Business*. Retrieved from <http://thescipub.com/abstract/10.3844/ajebasp.2010.179.184>
- Panurach, P. (1996). Money in electronic commerce: digital cash, electronic fund transfer, and Ecash. *Communications of the ACM*, 45-50 .
- SIMSON, L., Juels, A., & Pappu, R. (2005). RFID privacy: An overview of problems and proposed solutions. *IEEE Symposium on Security*, 34-43.
- Sterling, T. D. (1979). Consumer difficulties with computerized transactions: an empirical investigation. *Communications of the ACM*, 283-289 .

Weiner, S. E. (2007). Electronic Payments in the U.S. *FEDERAL RESERVE BANK OF KANSAS CITY*, 1-12.

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